

Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.



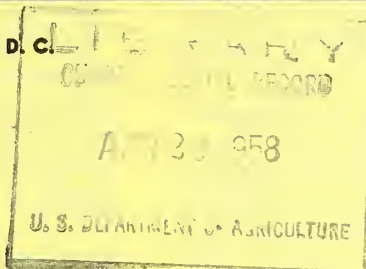
NUTRITION COMMITTEE NEWS

For exchange of information on nutrition education and school lunch activities.

U. S. DEPARTMENT OF AGRICULTURE, Washington, D. C.

MARCH-APRIL 1958

Reserve
1-982
A2N955



PRESENT DAY CONCEPTS OF LEARNING—THEIR USE IN NUTRITION EDUCATION FOR ELEMENTARY SCHOOL CHILDREN

WILLA VAUGHN TINSLEY, Ph. D., Dean, School of Home Economics, Texas Technological College

A short resume of reports on how food practices are changed was presented in the February 1952 issue of *Nutrition Committee News*. It was prepared by a subcommittee of the Interagency Committee on Nutrition Education and School Lunch which had reviewed some 100 journal articles reporting studies of the effectiveness of methods used in influencing food habits. From their review the subcommittee came to the conclusion that "changes in food practices are closely related to the extent that the individual needing improved food habits participates in determining *what* changes are to be made, and how."

This issue focuses attention on the current status of nutrition education and analyzes commonly accepted principles of learning presented by Dr. Robert S. Fleming and others at the 1957 Conference on Nutrition Education. It points out various ways in which these principles are now being applied to nutrition education for elementary school children.

NUTRITION EDUCATION IMPROVING

Nutrition education programs, those communitywide in scope as well as those in individual classrooms, have been showing a closer application of sound principles of teaching and learning during the past 5 years than was true during the period of expanded emphasis on better

In this issue of NCN Dr. Willa Vaughn Tinsley of the School of Home Economics at Texas Technological College discusses the uses of new educational principles in teaching nutrition to young school children. On pages 7 and 8 the rice enrichment and rice education program of the State of South Carolina are described.

eating habits in the 1940's. This conclusion is based on a review of about 50 reports of nutrition education projects selected from a wide scattering of professional and semitechnical publications such as the American Association for Health, Physical Education, and Recreation Journal; American Journal of Public Health; Journal of American Dietetic Association; Journal of Education; Journal of Home Economics; Journal of School Health; Nation's Schools; Newsweek; Parents' Magazine; Practical Home Economics; Scholastic; School Executive; School Science and Mathematics; Science Digest; Science News Letter.

Even though some well conducted nutrition education studies are being reported in a wide variety of publications, the frequency of reporting of such studies seems less than it was before 1952. Are fewer studies being

conducted (which is a logical conclusion)? Are investigators submitting fewer manuscripts? Are editors of educational journals becoming more discriminating in their selection?

At least now we do not read reports classified as *Nutrition Education* which tell of children coloring cutouts or pictures of foods that constitute groups in the Basic 7, of modeling foods from clay, of drawing foods, and the like, with no indication that teacher or children related these activities to any basic goal such as learning to practice good food habits.

The author recalls visiting all grades in one elementary school in the middle 1940's in which posters, charts, and pupil classwork in every room showed the influence of the Basic 7 Food Groupings. In each room the children were asked "What is the Basic 7?" None knew that it was (and is)—a guide for daily eating. Such answers as "a catalog of foods," "a picture of foods," "7 groups of foods" showed a lack of understanding the fundamental purpose of grouping foods for convenience in guiding one's selections for the day. Dr. Jennie Rowntree says that a mass of facts about nutritive values and recommended allowances is no more nutrition than a pile of lumber is a house. The value of knowledge lies in its possibilities.

Few research studies reported in the last 5 years deal with *how food practices are changed*. This question would be answered today largely as it was by the studies listed in *Nutrition Committee News*, February 1952.

Research in the psychology of learning, however, has been undergoing clarification, refinement, and likewise more widespread dissemination. It is encouraging to observe that with increased knowledge and understanding of the learning process, those directing emphasis on nutrition education are doing so more consciously on a sound educational basis than may have been the practice in the past. Earlier, patriotic impulses motivated just about everyone to "do something" even though what was done may have fallen far short of motivating people to adopt improved food habits.

APPLYING PRINCIPLES OF LEARNING IN NUTRITION EDUCATION

Two basic assumptions underlie the concept of learning. One, learning is a process of changing behavior—not just an accumulation of facts—and, if it is *desirable* learning, behavior is *improved*. The other, learning (improved behavior) is more likely to occur when there are problems to solve which are real to pupils and within their range of interest.

Place emphasis on the individual

Since every learner is a unique individual, with different hereditary, home, and social backgrounds, and with different purposes or drives, learning takes place more readily when emphasis is placed on the individual. This principle alone would point the necessity for individual pupil food surveys as a sound basis for nutrition education.

In general, most teachers know—or can find out—the diet patterns of their group of children. Children's food habits usually will show that many are consuming less than recommended amounts of green and yellow vegetables, citrus fruits, and milk. But the *teacher's* knowledge of this general pattern of children's dietary shortcomings does not mean that the children themselves, and the parents of the children, also have this knowledge. Even if this information is passed on, it still does not reveal the individual child's eating practices which, in most cases, will be good in some respects and in some others, not so good. Any child is more interested in and concerned with his own situation than that of children in the aggregate. Likewise, parents are more interested and concerned with their own child or children than with children in general.

Studies of the food habits of individual pupils, from the simple, nontechnical types to the more elaborately controlled investigations, are the most logical means of determining the *needs* for nutrition education. These needs can be defined in terms the child can recognize. For example, whatever food plan is used as a guide, the amount of milk recommended for daily consumption for elementary school children is 3 to 4 cups. When an individual child's intake falls short of this amount, he can readily see that he needs to include more milk to meet recommendations. This fact can also be transmitted to parents of any educational level. On the other hand, if nutritional needs of the child are expressed in grams of calcium, none of the children and relatively few of the parents are in a position to translate this information into practical application.

Use simple terms.—Selection of terminology is very important with children in the primary grades. For instance, dark-green and deep-yellow vegetables, frequently found to be consumed in less than recommended amounts, must be identified for the young child by names of individual foods, some of which he can recognize. The very young child thinks of individual foods, not classifications of foods such as "fruits," "vegetables," and "nuts." To expect a child in primary grades to know subgroups such as "citrus" fruits, or "green and yellow" vegetables is as farfetched as to expect him to understand geographical divisions such as States, coun-

ties, municipalities, even though he may begin to be introduced to them.

Respect existing food habits.—Equally important in helping children recognize their individual goals in nutrition is the need for protecting each child from embarrassment over any shortcoming which study of his dietary habits may reveal. Food practices are personal and, as such, merit respect and confidential treatment.

Reports of recent widespread studies of the food habits of children—such as those in Iowa, Nebraska, Ohio, Kansas, and Georgia and in single centers as in New York City, Brentwood, Mo., Englewood, N. J., and Lexington, Ky.—all show that the studies began with establishing what current practices were, in terms of individual pupils, as a base for future action.

Personalize learning experiences.—Among older pupils an effective means of interesting individual boys and girls in their own health was reported by Clemmons. The Wetzell Grid, being by its very nature individual, was used in stimulating a desire to improve health habits. A study of food habits followed naturally as one phase of a broader health survey.

“Martha Nell drank a whole glass of milk last night! That’s something we never could get her to do,” said her mother as she recalled her child’s simple statement: “The teacher at school said milk is good for you.”

A chubby youngster in Henderson County, Ky., announced he had made a new “friend”—broccoli—which his mother had now served for the first time after his insistence. He had become acquainted with broccoli at school when they were learning about *green* vegetables.

Use simple questionnaires in dietary studies.—It should be recognized that children themselves can understand only the simple studies of food habits. No matter how much more accurate highly scientific studies may be, involving as they will skilled technicians, nurses, and physicians, and laboratory analyses, they are of little value if the child fails to see the relationship between the investigation and whether or not he is eating needed amounts of a variety of foods.

The very act of learning takes place individually, and by an individual—it cannot be done for him—hence every opportunity to relate nutrition education to the individual learner is worth seeking. The simple phrasing of a question, “What do *you* eat for breakfast?” not, “What do boys and girls eat for breakfast?” can focus attention on the learner as an individual.

Place emphasis on the learner’s purposes

Motivation is self-contained when the learner accepts a goal or a purpose which he understands and desires

to accomplish. Each individual has his own perception of a task; it is closely associated with his life experiences. The learner’s perception of a task often differs from that of his teacher and his parents. There is always the age barrier between them and in the case of the teacher there may be socioeconomic barriers as well.

When the personal goals of the learner are examined in nutrition education, the poor eater may be far more eager for love and attention than he is for good health. Adults want children to be healthy. The child may or may not desire “good health” as he perceives it.

Children want to grow.—The one most likely personal goal of every child to be capitalized on in nutrition education is his interest in growing “big.” When the child is *convinced* (not just *told*) that food influences growth, and later that different foods do different things for him, he has a natural interest in trying to eat for the accomplishment of his growth-goal.

Directed observation of fast-growing animals and plants can convince a child that food aids growth. Quick-sprouting seeds such as oats or wheat can be placed in two glass containers with an inch or so of soil. In one, water is added while the other is left dry. Growth soon starts in the glass that is moist because the moisture permits the seed to utilize available food. Growth will not take place in the dry glass. The sprouted seedlings can be denied light for a few days and color changes will soon be evident. Children can be guided to recognize that light, air, and temperature are also factors in growth.

Fast growing animals such as the albino rat are ideal experimental animals for demonstrating the role of food in growth. Their food habits are more readily comparable to those of human beings than are the nutritive needs of plants.

One weanling rat placed in a suitable cage and fed everything that is recommended for boys and girls to eat constitutes the control experiment. Simply place “some of everything” in the cage each day, and in forms recognized by the children.

For very young children, experiments must be extremely simple, and in terms the child can comprehend. Weighed diets, mixed scientifically to contain all the recommended nutrients, have no place in animal experiments for *young* children. They need to see *milk* instead of powdered calcium, and carrots or other common *deep-yellow* vegetables instead of vitamin A concentrate.

While nutritionists may know that rats can manufacture ascorbic acid within their bodies, it seems wise to go ahead and place ascorbic acid-rich foods in the cage along with other recommended foods for children. Remember that the concept that one is striving to estab-

lish is that a variety of foods will help *boys and girls* to grow.

The quickest and most convincing experimental comparison with the "good" diet is one that is poor enough to produce some unmistakable signs of poor health in the litter mate in another cage. This rat is frequently placed on a snack diet composed largely of carbohydrate foods, such as jelly sandwiches. One should be careful in selecting this "poor" diet not to prejudice children against any nutritious food. Nutrition teaching must always be based on scientific facts.

Accent the positive.—Let us teach children combinations of foods which support good body nourishment and not alienate them by attempting to "wean" them away from the foods for which they have a natural acceptance, namely sweets. Negative approaches often accomplish the opposite from desired goals and put barriers between teacher and learner. If we can get children to eat what they *need*, foods they consume which are superfluous to their needs will not loom in importance.

In a Latin American community where children's diets were lacking in milk and green and yellow vegetables, the teacher placed one rat on pinto beans (cooked with peppers), meat (occasionally), and tortillas—the typical diet of the majority of the children. The teacher had wisely commended the children—and the parents—for the good qualities these foods provided, but she insisted that they see if certain *additions* to family meals would not increase growth in the children. The other rat was also fed the identical beans, occasionally meat, and tortillas, but he was given, *in addition*, milk, carrots, fresh greens, and eggs. The "ratones" proved the point, although it took about 3 weeks to see upon mere observation that the more complete diet was having different results from the core diet.

Only the imagination of the teacher, and perhaps her pupils, limits the approaches to simple research studies. Certainly animal experiments of a very elementary nature can demonstrate and prove to even primary grade children the need to eat a variety of foods.

Dissection of animals, of course, has no place in research used in teaching children, nor should any animals be permitted to die. As soon as all children in the group recognize that the animals on the poor diet are developing poorly physiologically the animals should be placed on the good diet and followed until all children see that the animals' unhealthy signs are lessening.

Creating readiness for learning.—The teacher facilitates learning through creating a readiness for the fulfillment of important tasks. After a survey of food habits has been made where every child knows his own practices, acquaintance with simple guides for good food

selection will furnish the learner with a goal to aim toward. The much-used Basic 7, the newer Daily Food Guide, Food for Fitness, or other reliable guides expressed in terms the child can understand can be used. The goal, plus his knowledge of how his usual practices measure up to it, provides the learner with a logical basis for a plan of action.

Helping underprivileged children.—Alert teachers can find ways of helping children who live in situations which fail to provide foods needed for health. Many schools participate in the National School Lunch Program which provides for free lunches to children whose families cannot pay for them. Of course, this is only one meal out of a day's total. In many communities, service clubs, church organizations, and welfare agencies may also contribute to the food and health needs of worthy children. All such assistance is different in different communities.

Coordinating learner, school, and home goals.—All teachers (or a team representing different subjects or fields) should coordinate their efforts so that conflicting goals do not occur and confuse the learner. Likewise, school goals and parent goals need integration with the learner's goals, if learning is to be facilitated.

In a communitywide nutrition education program in Cape Sable Island, Nova Scotia, those directing the study practiced coordinated planning and execution of the entire project, including an inservice training program for all teachers. In their random sampling, 1 out of 5 families in the entire community was surveyed. Thus, in establishing needs and in planning to meet the needs many people were involved. Main emphasis usually may well be focused in the school, but to be effective, nutrition education must extend beyond the school into the community where most eating takes place and parental influence is most felt. When pupil and parent and teacher are all working toward a common goal, that goal is very likely to be achieved.

Place emphasis on human relations

As emphasis is given to feelings, anxieties, concerns, questions, and problems of the learner, a setting is being created for receptiveness and learning. Eating is a personal experience in itself, yet it is an experience around which many cultural forces operate that may make it difficult for the young child to feel at ease and comfortable with respect to his eating.

Let the child be comfortable in his food pattern.—It is important to recognize the good points in each child's food habits, the practices which he deserves recognition for acquiring and which he should be encouraged to

maintain as a sort of bulwark against the realization that there may be other practices (most often, omissions) that need changing.

This can be done by checking first on the inclusion of recommended foods in diets.

Bread and cereals are a safe start because this group of foods is likely to measure up well—thus providing something for which the child can be commended. The meat group might come next as it is about as likely to measure up well against recommendations—in all but extremely low economic circumstances.

Responses may be misleading unless children fully understand what foods are to be included in each group. Therefore, the teacher must be willing to take the time needed to prepare pupils for their job as respondents. Equally important is the need for the teacher to have the necessary background to give this orientation. For example, many children fail to realize that they eat butter or margarine unless they see it visibly, as spread on bread. Without sufficient instruction they are likely to omit such foods in their diet records when in actuality they may be consuming recommended amounts cooked in foods or placed on them before serving.

Also, there is sound argument for a survey of the learner's *total* eating habits as against partial surveys that investigate only breakfast habits, noonmeal habits, or worse still, the eating of some one isolated food. Such a practice not only produces incomplete data, but can develop in the learner a very unsound concept of good nutrition.

Communication between teacher and learner is much more likely to flow easily when human relations factors are recognized. Children have been known to falsify food habit records in an effort to be accepted by peers and teacher. Here especially is it important to respect personal habits relating to eating. The writer has observed teachers who thought nothing of having partaken of a sweet roll and coffee for breakfast, chide pupils whose breakfasts included beans instead of cereal. Some families prefer their cereal foods for supper instead of at the beginning of the day. Nutritive value is not dependent upon time of day. In nutrition education, as in other types of learning, feelings of belonging and security are basic to maximum progress.

Place emphasis on involvement

Learning is facilitated as the learner is involved in an active way. Nutrition education, involved as it is with activities easily adapted to pupil participation, can be so directed as to enrich learning in many different ways. From the first stage of nutrition education—the food

habit survey—throughout successive stages—animal experimentation, acquaintance with reliable sources of information and guides for good eating, tasting new and unfamiliar foods, planning meals, participating in the school lunch, evaluating progress, the learner can *do* things himself.

For ideas on activities for young children in addition to those mentioned above see earlier issues of NCN, especially the January-February 1955 issue.

Place emphasis on teaching materials

Select materials that are in line with the developmental age of the children, their current interests, and familiar situations and activities in school, home, and community. Size and clarity of printed type, style of writing including use of humor and action, choice of words and pictorial illustrations, suggestions for projects, and adherence to principles of learning are among many points that need to be considered.

Use of a variety of appropriate materials contributes to the effectiveness of the learning process because imagination and interest are stimulated. Numerous materials of varying quality and usefulness are available. To guide the teacher in judging such materials, members of a nutrition education workshop at Texas Technological College, June 1954, described desirable characteristics of nutrition education materials as follows:

1. Scientifically accurate
2. Based on standards of nutrition consistent with total health
3. Directed toward promoting good nutrition
4. Suitable in content to those for whom intended
5. Understandable to those for whom intended
6. Positive in approach
7. Compatible with present teaching procedures
8. Free from sales promotion
9. Direct and simple in presentation
10. Easy to handle, display, and store
11. Well designed and illustrated, with good balance between pictures and text
12. Clear, concise, easy to read
13. Identified with source
14. Dated
15. Readily usable (applicable)
16. Up-to-date and timely
17. Labeled for whom intended.

Among teaching materials rating high are many developed by food firms and trade associations. To help teachers choose from the large selection of commercial materials available, guide lines have been set up by a joint committee of home economists in business and in

education who were called together by the Office of Education. Single copies of the publication summarizing committee suggestions, Business-Sponsored Home Economics Teaching Aids, Misc. 3438 (Rev. 1955), may be obtained from the Office of Education, U. S. Dept. of Health, Education, and Welfare, Washington 25, D.C.

REFERENCES

- HOW WE MAKE NUTRITION PRACTICAL. New Orleans foods unit. A. J. Pearce. *Prac. Home Econ.* 34: 20-21. Nov. 1955.
- SCHOOL LUNCHROOM IMPROVES FOOD HABITS. L. Tullos. *Prac. Home Econ.* 33: 43. Apr. 1955.
- WHAT PROGRESS ARE WE MAKING IN NUTRITION? Reports from the National Food and Nutr. Inst. Nutrition—Past and Future (excerpts). W. H. Sebrell, Jr. *Prac. Home Econ.* 31: 35-36. Feb. 1953.
- A COOPERATIVE EXPERIMENT IN NUTRITION EDUCATION. K. Thody. *Prac. Home Econ.* 34: 48-49. Sept. 1955.
- FASHIONING LINKS IN THE CHAIN OF GOOD NUTRITION. M. C. Cassady. *Prac. Home Econ.* 31: 35. Mar. 1953.
- THE CURRICULUM IN SCHOOL LUNCH. F. Moore and F. L. Boyd. *Prac. Home Econ.* 33: 18-20. Jan. 1955.
- NUTRITION EDUCATION AS I SEE IT. Panel—F. E. Whitehead, leader. *Prac. Home Econ.* 32: 37-39. Feb. 1954.
- THE EFFECTS OF BREAKFAST HABITS EXPLORED. *Prac. Home Econ.* 2: 60-61. Sept. 1956.
- WE BUILD PUBLIC RELATIONS THROUGH OUR BETTER BREAKFAST CAMPAIGN. A. Toms. *Prac. Home Econ.* 1: 36-37. Feb. 1956.
- A COMMUNITY PROJECT IN BETTER BREAKFASTS. H. Kreigenhofer. *Prac. Home Econ.* 33: 43. Feb. 1955.
- TEACHING NUTRITION TO BOYS AND GIRLS. M. E. Lowenberg. *Jour. Home Econ.* 44: 792-793. Dec. 1952.
- FOOD CHOICES OF NEBRASKA CHILDREN. R. M. Leverton and M. C. Coggs. *Jour. Home Econ.* 43: 176-178. Mar. 1951.
- TEACHING NUTRITION TOWARD A MEASURED GOAL. M. Harris and G. H. Roehm. *Jour. Home Econ.* 49: 419-422. June 1957.
- FOOD AND NUTRITION TEACHING IN FERMENT. D. L. Hussemann. *Jour. Home Econ.* 49: 93-95. Feb. 1957.
- TEAMMATES IN EDUCATION FOR HEALTH. B. Bosley. *Jour. Home Econ.* 48: 622-624. Oct. 1956.
- MOTIVATING ADOLESCENTS TO OPTIMUM GROWTH WITH THE WETZEL GRID. A. M. Clemmons and H. Williams. *Jour. Home Econ.* 44: 192-194. Mar. 1952.
- MAINTAINING SURVEY CO-OPERATION. W. T. Dean. *Jour. Home Econ.* 44: 693-696. Nov. 1952.
- A NUTRITION EDUCATION PROGRAM IN CAPE SABLE ISLAND (NOVA SCOTIA). J. H. Archibald. *Jour. Home Econ.* 45: 575-578. Oct. 1953.
- CHILDREN BENEFIT FROM SCHOOL FEEDING PROGRAM. E. L. Terrell and R. B. Attaya. *Nation's Schools.* 56: 78. July 1955.
- THREE METHODS OF CLASSROOM FEEDING. M. E. Terrell. *Nation's Schools.* 59: 114. Feb. 1957.
- EATING HABITS OF TEEN-AGERS. N. H. Radell. *Nation's Schools.* 59: 116. June 1957.
- FOOD FOR TEEN-AGERS. *Science News Letter.* 62: 228. Oct. 11, 1952.
- CONSIDER FEELING OF CHILD FOR FOOD. *Science News Letter.* 62: 136. Aug. 30, 1952.
- EXPERIMENTS IN CHANGING FOOD HABITS. M. Radke and D. Klisurich. *Jour. Amer. Dietet. Assoc.* 23: 403-409. 1947.
- LECTURE AND DISCUSSION-DECISION AS METHODS OF INFLUENCING FOOD HABITS. M. Radke and E. K. Caso. *Jour. Amer. Dietet. Assoc.* 24: 23-31. 1948.
- DON'T MAKE YOUR CHILD A FUSSY EATER. C. Russotto. *Parents' Mag.* 31: 52. Sept. 1956.
- TEACH YOUR CHILD TO LIKE MANY FOODS. S. S. Pfeiffer. *Parents' Mag.* 32: 66. May 1957.
- SCHOOL LUNCH IS A TEAM PROJECT. K. E. Lamson. *Sch. Executive.* 76: 136. Jan. 1957.
- THE SENSIBLE WAY WITH FEEDING PROBLEMS. E. B. Hurlock. *Today's Health* 29: 68. Apr. 1951.
- EATING IS FUN. M. O. Lerrigo. *Today's Health.* 30: 48-50. Jan. 1952.
- TRUTH ABOUT FOOD FADS. R. J. Williams. *Science Dig.* 34: 21-25. Oct. 1953.
- FOOD HABITS OF MAINE SCHOOL CHILDREN. M. M. Clayton. *Amer. Jour. of Pub. Health.* 42: 967-968. Aug. 1952.
- THE PLACE OF NUTRITION IN THE HEALTH EDUCATION PROGRAM. J. I. Rowntree. *Amer. Jour. of Pub. Health.* 42: 293-298. Mar. 1952.
- I DON'T HAVE TO EAT THAT . . . POP NEVER DOES. F. J. Stare and J. S. Lyons. *McCall's.* 83: 120. July 1956.
- RESEARCH IN ACTION. P. R. O'Keefe. *Jour. School Health.* 26: 58-64. Feb. 1956.
- NUTRITION EDUCATION IN ACTION. F. E. Whitehead. *Jour. of Educ.* 136: 210. Apr. 1954.
- DEFICIENCIES IN THE EDUCATIONAL FACILITIES. J. Robins. *Chem. and Industry.* p. 481-482. June 9, 1956.
- EATING FOR BETTER HEALTH . . . HENDERSON COUNTY, KENTUCKY. *Ladies' Home Jour.* 72: 27. Mar. 1955.
- RAPID SURVEY OF EATING HABITS—A STIMULUS TO NUTRITION EDUCATION. M. J. Babcock and L. O. Gates. *School Science and Math.* 54: 601-611. Nov. 1954.
- HOW DUCKS TEACH CHILDREN. J. Bareham. *Amer. Assoc. for Health, Phys. Educ. and Rec. Jour.* 25: 18. Apr. 1954.
- PROCEEDINGS OF NUTRITION EDUCATION CONFERENCE, APRIL 1-3, 1957, WASHINGTON, D. C. U. S. Dept. Agr. *Misc. Pub.* 745, 74 pp. Nov. 1957.
- HOW ARE FOOD PRACTICES CHANGED? *Nutrition Committee News,* Feb. 1952.

RICE ENRICHMENT PROGRAM

South Carolina has now become the first State to pass a law requiring enrichment of all rice sold within the State. It was also the first State to enact a law requiring enrichment of bread and flour (see NCN June 1951, May-June 1954). With passage of its rice enrichment law in 1956, South Carolina has developed an extensive educational program to encourage proper cooking of rice. The South Carolina State Nutrition Committee has been one of the prime movers in both the education program and the enactment of the law making rice enrichment compulsory in the State.

Education program.—A circular published in 1957 by the Clemson Extension Service entitled "Rice—Recipes and Enrichment" has been prepared for home demonstration club members and other lay persons to explain the how and why of rice enrichment. This booklet gives proper cooking procedures so that the added nutrients will still be in the rice that is brought to the table.

Homemakers, cooks in public eating places and institutions, and others who prepare rice and rice dishes need this information because of the way rice is enriched. In one method clean rice that is marketed in sealed packages is coated with a small amount of powder containing the enriching ingredients before packaging. The enriching powder has been found to stick tenaciously to the dry rice grains but is easily washed off with water. In the other method highly fortified and rinse-resistant grains of rice are mixed with 200 times their weight of ordinary white rice. The fortified grains are coated with edible material such as zein to prevent loss of the added nutrients if the rice is washed before cooking. Nutrients and flavor are lost from either product if excess cooking water is subsequently drained off.

The chief aim of the current rice education program in South Carolina is to encourage the proper preparation of rice enriched by added nutrients. The latter is less expensive to produce than the rinse-resistant enriched rice.

According to law all packages of rice enriched by addition of nutrients in powdered form must be conspicuously labeled: "To retain vitamins do not rinse before or drain after cooking." A survey showed that the average homemaker is willing to cook rice this way if she really understands the reasons why, and is shown the good product she can get without washing or draining.

Many State agencies and other groups have cooperated in the nutrition education program. Radio and television programs and a film entitled "Rice, Cookery and Enrichment" are being used. The Nutrition Department of the South Carolina Experiment Station has demonstrated proper rice preparation to teachers, home

demonstration agents, school lunchroom supervisors, public health workers, and kitchen managers of commercial restaurants, hotels, hospitals, and State institutions. Many of these have in turn given demonstrations on rice cookery to others. Rice millers have changed recipes printed on packages so that none of them now recommend use of excess cooking water or draining. It will be desirable if this program of education can be pursued in other States where substantial amounts of rice are consumed.

Development of rice enrichment.—South Carolina is the only State in which addition of vitamins and minerals to all rice sold in the State is mandatory. Puerto Rico and the Philippines also require by law addition of vitamins and minerals to milled rice. Passage of the Puerto Rican law in May 1951 helped bring about compulsory rice enrichment in South Carolina. Mills processing rice for shipment to Puerto Rico had installed rice enriching equipment in order to comply with the Puerto Rican law. The millers were willing to extend the enrichment process to all rice sold in South Carolina.

In certain coastal regions of the Gulf of Mexico and the Carolinas, rice is consumed as a staple. Rice consumption is highest among low income families. Therefore, it is important to have low-priced, high-nutrient value rice available on markets in this area. South Carolina has the second highest per capita rice consumption in the United States. More pounds of rice than flour were sold in one chain of stores in the State during a check period. In the coastal part of the State especially, rice and grits, which are used interchangeably, are a basic component of daily diets. The South Carolina State Nutrition Committee, which had helped secure passage in 1949 of a bill to ensure enrichment of all cornmeal and grits, felt it was in this coastal section that State rice enrichment would make its greatest contribution to health protection. In 1955 the committee unanimously endorsed legislative action for the enrichment of rice sold in the State and appointed committees to take to the proper officials and leaders the suggestion that rice enrichment should become law in the State (see NCN March-April 1955, p. 6).

At that time the State Nutrition Committee had already started its educational program in restaurants, cafeterias, and hospitals to have rice cooked without excess water and was working on spreading knowledge of the benefits to be derived from enrichment to all consumers.

The State Board of Health recognized that rice enrichment was in the public interest and supported the legislation. It was evident that if all rice sold in the State was enriched the cost of doing so would be lessened considerably. The State Nutrition Committee felt that there

were thus no real grounds for opposition to the legislation—it was more a matter of creating interest and support for a better nutritional measure.

That this aim had met with success was shown when the legislature passed the Rice Enrichment Act, and the Governor signed it into law, to become effective July 1, 1956.

Each pound of enriched rice must contain not less than 2.0 milligrams of thiamine, not less than 16 milligrams of niacin, and not less than 13 milligrams of iron. Each pound may contain either or both of these optional ingredients: Not less than 500 milligrams of calcium and not less than 1.2 milligrams of riboflavin. Rice that is rinse-resistant must contain not less than 85 percent of the above-stated amounts of thiamine, niacin, and iron after rinsing.

Status of Federal standard.—In 1949 the Food and Nutrition Board of the National Research Council issued a resolution urging the nutritional improvement of rice.

In the summer of 1957 the Food and Drug Administration, as a result of the NRC recommendations, published a proposed standard of enrichment for milled rice that specified the amounts of vitamins and iron that rice labeled “enriched” must contain if it is shipped in interstate commerce. The standard was established to assure the consumer that rice labeled “enriched” has the same added nutrients, i. e., thiamine, riboflavin, niacin, and iron, that are used in other enriched cereal products.

Consistency of State and Federal standards.—The processes for enrichment and amounts of vitamins to be added are the same, with one exception, in both the South Carolina standards and the Federal Food and

Drug standards. Before the Federal standard went into effect—February 27, 1958—objections were filed to the provision in the standard requiring riboflavin. The objections made it necessary to stay the riboflavin requirement pending a public hearing to be announced later. The South Carolina Rice Enrichment Act as passed in 1956 pointed out the desirability of uniformity between requirements of the State and the Federal government.

REFERENCES

RICE—RECIPES AND ENRICHMENT. S. C. Extension. Serv. Cir. 431. Clemson, S. C. (Not paged), illus. October 1957.

ORDER RULING ON PROPOSAL TO ADOPT A DEFINITION AND STANDARD OF IDENTITY FOR ENRICHED RICE. Federal Register, Title 21—Food and Drugs, Chapter 1—Food and Drug Administration, U. S. Department of Health, Education, and Welfare. Part 15—CEREAL FLOURS AND RELATED PRODUCTS, August 27, 1957.

RICE ENRICHMENT IN SOUTH CAROLINA. Lease, E. J., Brunson, J. P., and McDill, J. The Rice Jour. 58 (9): 14-16, Aug. 1955.

ORDER CORRECTING WORDING OF DEFINITION AND STANDARD OF IDENTITY FOR ENRICHED RICE, STAYING EFFECTIVENESS OF REQUIREMENT AS TO RIBOFLAVIN, AND CONFIRMING EFFECTIVE DATE. Federal Register, Title 21—Food and Drugs, Chapter 1—Food and Drug Administration, U. S. Department of Health, Education, and Welfare, Subchapter B—FOOD AND FOOD PRODUCTS, Part 15—CEREAL FLOURS AND RELATED PRODUCTS, February 25, 1958.